



COLORADO SPRINGS,  
COLORADO



December 1993



Pikes Peak Radio Amateur Association, Inc.  
P. O. Box 16521  
Colorado Springs, Colorado 80935

FIRST CLASS MAIL



# Ø BEAT



## P.P.R.A.A Officers and Directors

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Ø-Beat Editor--	Ron Deutsch	NKØP	4305 Ridgelane Dr.	80918	593-8352

**ZERO BEAT** is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc., PO Box 16521, Colorado Springs, Colorado 80935. For membership and subscription information see last page of this publication. The Pikes Peak Radio Amateur Association meets monthly on the second Wednesday of each month at the Disabled American Veterans, Chapter 26, 6880 Palmer Park Blvd. at 7PM.

**EDITOR:** Ron Deutsch, NKØP, 4305 Ridgelane Drive, Colorado Springs, Colorado 80918 (719)593-8352

Deadline for submission of articles or ads is the 21st of each month. Submissions may be sent to the Editor or to the club PO box. Permission to reprint articles is granted provided credit is given to both the author and this publication.

**ADVERTISING RATES:** Full page \$48; half page \$24; quarter page \$12; business card \$6. These are monthly rates and are billed quarterly. Send your ad requests and payments to: PPRAA, PO Box 16521, Colorado Springs, Colorado 80935.

## Friendship Award

The ARRL recently announced the creation of the Friendship Award. The Pikes Peak Radio Amateur Association is pleased to tell you we will be issuing the awards to those who earn them. This is a fun award that all hams can earn regardless of the class of license they hold.

You can earn this award by having contacts with 26 other amateurs whose call signs end with each letter of the alphabet. This award is available to ARRL members who complete the required contacts and fill out a log sheet like the one in the November issue of QST. You can copy the form, or if you wish, I have a stock of application forms. I will send you an application if you send me a business sized SASE.

Once you have completed the application I can issue you the award. If you would like the award mailed to you, please send me a 9 x 12 inch SASE (with 2 units of postage) along with your application. It is a nice certificate and I would not want to fold it to fit a business envelope.

If you have any questions please call me at 531-9423. You may send applications to me at:

Rick Brown, KDØSU, 3249 Squaw Valley Dr.  
Colorado Springs, CO 80918

## VE Testing

*Rick Brown - KDØSU*

VE Testing is sponsored by the PPRAA on the 2nd Saturday of February, April, June, August, October and December. Testing takes place at 9:00 AM at:

Denver Technical College (DTC)  
225 South Union  
Colorado Springs

While we prefer pre registration, walk-ins are accepted on a space available basis. As a reminder to anyone wishing to take an examination you should bring the follow items:

1. \$5.60 (preferably a check made out to ARRL/VEC) for all exams other than elements 1A or 2.

2. Picture identification

3. A copy of your current amateur license as well as the signed original, or a copy of any examination credit you have.

4. Pen, pencils, and a calculator if you need one.

To pre register, or if you have any questions, please call me at 531-9423. Please do not call DTC, they only provide us the place, and do not have any of the information about testing.

# PPRAA Christmas Party

*Mark your calendars!!*

*December 8th (regular club meeting night)*

*7PM at the D.A.V.*

*Entertainment will be provided.*

*Door prizes will be given away including a nice scanning receiver.*

*A very short business meeting will precede the festivities.*

*Please bring your favorite snack item such as cookies, cake, candy, chips, small sandwiches, etc.*

*Club will provide punch. D.A.V. will be open as usual for other beverages.*

*The format will be similar to last year...so expect a great time!!*

*For questions or information contact:*

*Luci. NFOUD. 636-1290 or Susan. KATNIX. 495-0624.*

*Come one and all celebrate the season with fellowship, food, and prizes!*



## The Library Show

Saturday, October 16, 1993

The third annual presentation of, "An Introduction to Ham Radio", was held at the East Library branch of the Pikes Peak Library District. It was hosted by the Pikes Peak Radio Amateur Association and we were joined by a number of other organizations from the Colorado Springs/Denver area. The following were represented:

Edge of Space Sciences - Denver  
El Paso County Search and Rescue  
Pikes Peak Soaring Society  
REACT  
RACES  
ARES  
Skywarn

In addition the following individuals provided interesting exhibits and added greatly to the effectiveness of the show.

Jake Jacobs, NØCYR, and his able helpers Stephie Cox, KBØECH and Megan Baxter ran the message center. Jake also found time to take some great pictures for us. Thanks Jake.

Oak Stockton, KØROL, and Board Member Ora Rose, NØQJX, provided a two way ham radio TV display.

Treasurer Tom McDaniel, NØNTX, exhibited ham radio communication by satellite.

Zero Beat editor Ron Deutsch, NKØP, again let us use his Tesla Coil as the main attention grabber in the front lobby of the library.

Our thanks to all those members, spouses and friends who came out and helped to make this a great show. My personal thanks to John Kramer, NØVBM for his help. And last but certainly not least we all owe a big debt of thanks to Lynn Harrison, of the Pikes Peak Library District. Lynn is the person who makes this all possible. You should all know, in case you don't, that Lynn is this year's "Librarian of the Year" for the Pikes Peak Library District. We are really fortunate to have such a capable young lady as our contact.

My apologies for not giving credit to the photographers who supplied the great pictures that appeared in the November issue of Zero Beat but the pressure of time just didn't make it possible. So let me correct that shortcoming right now. Our photographers were Jake Jacobs, NØCYR, Kath Davis, NØOPG and her OM, Charlie, KW4O. Thank you all. Here's the list of credits:

Page 3	The Pikes Peak Soaring Society photo - NØCYR Ron Deutsch's tesla coil - NØOPG and KW4O
Page 4	NØOPG and KW4O
Page 8	Jake and Stephie, taken by one of Jake's pals. The club trailer - NØOPG and KW4O Oak's ATV setup - NØCYR
Page 11	NØOPG and KW4O (NØOPG took that prize winning photo of the little boy)

*Submitted by Al Craig, N2IWZ*



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# December 1993

## PIKES PEAK RADIO AMATEUR ASSOCIATION

SUNDAY

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

1

7:30pm CMRG Info  
Net 147.345  
8:00pm SCTN 146.  
97

2

7:00pm Teller Co.  
ARES Net 146.82  
8:00pm SCTN 146.  
97

3

8:00pm SCTN 146.  
97

4

7:00am  
Village Inn  
Breakfast  
8:00pm SCTN 146.  
97

5

8:00am COLORADO  
ARES NETS 3928.0  
6:30pm RACES HF  
NET 3990.5  
8:00pm SCTN 146.97

6

8:00pm SCTN 146.  
97

7

7:00pm ARES NET  
146.97  
7:30pm RACES  
NET 146.97  
8:00pm SCTN 146.  
97

8

7:00pm  
PPRAA  
Meeting &  
Christmas  
Party  
8:00pm SCTN 146.  
97

9

7:00pm Teller Co.  
ARES Net 146.82  
8:00pm SCTN 146.  
97

10

8:00pm SCTN 146.  
97

11

7:00am  
Village Inn  
Breakfast  
9:00am VE Testing  
(see page 2)  
8:00pm SCTN 146.  
97

12

8:00am COLORADO  
ARES NETS 3928.0  
6:30pm RACES HF  
NET 3990.5  
8:00pm SCTN 146.97

13

8:00pm SCTN 146.  
97

14

7:00pm ARES NET  
146.97  
7:30pm RACES  
NET 146.97  
8:00pm SCTN 146.  
97

15

7:00pm MARC  
Meeting  
Woodland Park  
7:30pm CMRG Info  
Net 147.345  
8:00pm SCTN 146.  
97

16

7:00pm Teller Co.  
ARES Net 146.82  
8:00pm SCTN 146.  
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17

8:00pm SCTN 146.  
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18

7:00am  
Village Inn  
Breakfast  
8:00pm SCTN 146.  
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8:00am COLORADO  
ARES NETS 3928.0  
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7:00pm ARES NET  
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24

8:00pm SCTN 146.  
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7:00am  
Village Inn  
Breakfast  
8:00pm SCTN 146.  
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26

8:00am COLORADO  
ARES NETS 3928.0  
6:30pm RACES HF  
NET 3990.5  
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27

0-BEAT  
DEADLINE  
8:00pm SCTN 146.  
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28

7:00pm ARES NET  
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7:30pm RACES  
NET 146.97  
8:00pm SCTN 146.  
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7:30pm CMRG Info  
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8:00pm SCTN 146.  
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7:00pm Teller Co.  
ARES Net 146.82  
8:00pm SCTN 146.  
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8:00pm SCTN 146.  
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November 1993

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January 1994

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23	24	25	26	27	28	29
30	31					

MONTHLY EVENT CALENDAR

11/21/1993

# January 1994

## PIKES PEAK RADIO AMATEUR ASSOCIATION

SUNDAY

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

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MONTHLY EVENT CALENDAR

11/26/1993

## Dits & Bits

### For Sale:

Icom IC-2A H/T \$90.00

Tempo 1 H/T \$75.00

Icom IC 02/SAT H/T like new w/ many accessories. \$585.00 sell for \$385.00

Uniden HR-2510 10/11 meter (new) \$235.00

Many other item to numerous to list. Come and look. Will NØHRD (719) 471-8527

### Wanted:

Looking for someone with expertise \$ test equipment to check the receive section of my Ramsey FX-148, Ivan NØMIX 550-0161

### For Sale:

Mosley TA-33 Tri-Bander Exc. condition, plus Alliance HD-73 Rotor, All manuals \$289.00 neg. Mark NØEPF, 597-7420

### For Sale:

Yaesu FT-203R 2mtr HT w/extra nicad pack \$ VOX headset. \$100.00

Daiwa CN-103 cross-needle SWR/PWR meter, 140-525 Mhz, 0-20/0-200 watt range \$50.00

Maxon GMRS UHF HT, 2 ch, 1 watt \$100.00  
Call Doug, KG8EP, 637-3517

### For Sale:

Mosley TA-33 Jr Tri-bander, AR-40 Rotator, tower, \$325.00

Heathkit HW 101 w/pwr supply. \$225

Heath SB 610 monitor scope.

Heath SB 614 monitor scope.

Heath SB 634 station console.

Call Tom, WDØGVH, 597-9760

### For Sale:

Paccomm TNC 200 and a 2-line 40 character portable terminal, ideal for portable packet. \$75.00

Elektronik video ID generator \$50.00 You will need to order an EPROM from Elektronik that will cost about \$19.00.

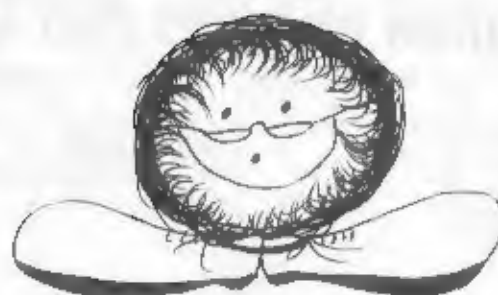
Call Malcolm Benton KE9S at 488-2071

### QST!

Jake, NØCYR, found a terrific telephone interference filter at Walmart for \$14.97. The Model # is Z-100B-1. Seems to identical to the one sold by AT&T but significantly cheaper.

### Swapfest!

The Northern Colorado ARC will hold its 1st annual winter Swapfest January 22nd 1994 at the Larimer County Fairgrounds. For more info call Musser Moore, NØVMN, (303)221-3698



## Food Pantry

**T**

hanks, PPRAA Members, for your continuing support of the Cimarron Hills Food Pantry at the D. A. V. You are all very smart. I'll bet you get straight A's and always do your homework. Have a wonderful Christmas Break--and remember-- Don't put off your Christmas Break homework until January 1st.

*Miss Prunella, PhD.  
School Marm*



## OM\YL Lunch Bunch

**S**

eacon's Greetings! Come join us for the next Xmas luncheon of the OM\YL Chowhounds at the Country Buffet, Citadel Crossing, on December 18, 1993 at 12:00 noon. There will be a gift exchange not to exceed \$3.00, and the men will bring a gift for a man, and the women will bring a gift for a woman. 'Twill be a Merry, Merry time.  
C U there.

*73s Rosie Calaway, WAØMNL  
The "Cured" Xmas HAM*



# Repeaters: Ever Wonder How They Work?

by Duncan Insley, WA6RRU

Did you ever wonder how a repeater can talk and listen at the same time? People can't do that—politicians' claims notwithstanding.

Well, the reason a repeater can and a person can't is that a repeater doesn't "hear" itself. A repeater "talks" on one frequency and listens on another.

To illustrate this cute trick, imagine using your local repeater and a "handy-talkie" (HT). You put your HT in "duplex" mode and set it for your repeater's frequency. Then you push the talk switch. Your HT transmits on the frequency it's set for—right? No, and "gotcha" if you agreed.

Circuits in your HT "offset" the transmit frequency from the receive frequency. On two meters this offset is 600 KHz—up or down, depending on which standard frequency your repeater is assigned.

Thus, if your repeater frequency (the one referred to as its *output* frequency) is 147.330 MHz, your HT receives there, but transmits on 147.930 MHz to access it—an *up or positive "split."*

Upon "hearing" your HT's signal, the repeater retransmits on its output frequency, where your HT and all the other users' rigs are "listening."

Okay, you say, but why 600 KHz? Well, that relates to the technical problem of preventing a repeater from hearing its own transmitter. The greater the difference between a repeater's transmit and receive frequency, the easier it is to make a filter that can keep its own transmitter's output from blocking a repeater's receiver.

The 600 KHz standard is the result of a long history of searching for the best compromise between technical requirements and a practical band-plan.

Let's consider that filtering problem. If you visit a repeater installation, you will see several large cylindrical objects with coaxes connected to them among the equipment. These cylinders make up the repeater's *diplexer*. A *diplexer* is a repeater's main input filter. It must prevent

transmitter signals from overloading the repeater's receiver.

To appreciate the diplexer's task, consider that the repeater receiver has an input sensitivity of less than one micro-Volt, yet no more than ten feet separate the receiving antenna and the transmitting antenna, which is radiating ten Watts. The receiving antenna picks up enough transmit signal to produce tens of milli-Volts at the diplexer input. Also, the transmit and receive frequencies are separated by only 0.4 percent. Yet the diplexer must reduce the transmit signal to the micro-Volt range; it is a heck of a filter!

Many repeaters have diplexers even better than this discussion implies. When other repeaters share the site, some of their transmit frequencies may be even closer to your repeater's input frequency than its own transmit frequency.

Diplexer tuning is tricky; it takes special equipment and someone who knows how to use it. Every successful repeater has a resident genius who performs this miracle from time to time. Any huzzahs you pass along to your repeater guru are richly deserved and well-earned.

## Band Plan

After years of sometimes acrimonious debate, band plans were adopted for VHF and UHF bands. Here's the two meter one:

Frequency	Use
144.60-144.90	rttr inputs
145.20-146.50	rttr outputs
146.01-146.37	rttr inputs
146.61-146.97	rttr outputs
147.60-147.99	rttr inputs
147.00-147.39	rttr outputs

In the first two band segments, your rig's transmit frequency is offset minus 600 KHz. In the third segment, the offset is plus 600 KHz.

Remember that the whole two-meter band isn't reserved for FM. SSB and CW are usually found below 144.5.

Where do you go if your rig is FM but you don't want to use a repeater? The middle 200 KHz centered on 146.5 and 147.5 MHz are reserved by gentlemen's agreement for *simplex*.

Specific frequencies spaced 30 KHz (in most parts of the country) should be used. You don't need to remember them all. Just keep the standard simplex frequencies 146.52 and 147.54 in mind and then count up and down in .03 MHz steps to find the others. But be sure to stop before you reach the 0.40 or 0.60 MHz lower and upper 'simplex borders.'

## Tone Access (PL)

PL prevents random signals from turning on a repeater. A repeater with PL won't transmit unless it detects an input signal and the signal has the right PL pitch. Your rig must supply the PL tone.

Over the years, a standard set of tones—called CTCSS (Continuous Tone-Coded Squelch System)—were developed. Control by tones was first pushed by Motorola Communications and PL is their trademark.

PL tones are low, in the 110 Hz range, and barely audible—unless the tone level is set too high. A repeater with PL is commonly called 'closed' while one without PL is 'open,' but some say the words refer to policy, not hardware.

You'll want PL for travel, and PL in your handheld or mobile is essential for emergency preparedness.

Modern rigs come with PL built in, but a tiny PC board assembly can be installed in oldies. Ask around if you need one; either a local installs them, or can help you get one and install it yourself.

from the Feb. '92 'TARC Bulletin' of the Temple (TX) Amateur Radio Club

(April 1992 ARNS Newsletter)

## **PPRAA 1994 Swapfest Announcement**

*The PPRAA 1994 Swapfest will be held on May 21st 1994 at Liberty High School.*

*As chairman of the 1994 club Hamfest, I'm inviting ALL members to participate in the fun.*

*Contact me to see where you can help in making this the best Hamfest we ever had.*

*Phone me at 597-8964.*

TNX'S  
Harv WA3EIB



## General Meeting November 10, 1993

**Treasurers Report:** Previous Balance 927.44  
Income 249.00  
Expenses 343.52  
New Balance 832.92

Steve WB7VHR proposed contacting hams receiving new licenses and inviting them to join the PPRAA. He suggested the possibility of forming a membership committee to perform that function and perhaps contacting inactive members. He also suggested forming an Elmer committee to give technical assistance to new and old members.

**VE TESTING:** Next VE testing will be at the Denver Technical College, 225 S. Union on the second Saturday in December at 9:00 AM. Be there at 8:30.

**RACES:** Has moved to 6:30 P.M. MST Sunday on 3990.5.

**TRAILER:** Still looking for a new tire.

**INTERFERENCE:** Two reports. One was resolved when the source was discovered to be not the HAM down the street, but the reporting party's hot tub.

**XMAS PARTY:** The DAV has approved bringing in finger food for the party. We will start decorating at 6:00 P.M. Dec. 8th. Please come and help. There will be a choir and door prizes.

**HAMMY:** Presented to Luci NØOUD for the outstanding job she did as president of the PPRAA.

**E.J. Lund KDØNB** presented a program on contesting and computer logging.

*Submitted by NØNKP, PPRAA Secretary*

## Board Meeting November 15, 1993

The meeting was called to order at the QTH of Steve WB7VHR at 7:00 P.M.. The following members attended. Steve WB7VHR, Tom NØNTX, Al NØCMW, Ken NØNKP, Liz NØTUK, Ron NKØP, Luci NØOUD, Steve KØCI, and John NØVBM.

The board approved \$100.00 for XMAS party prizes and decorations. The board approved a request for the DAV to provide a cash bar for the XMAS party as long as the DAV provided the bartender, and no liability is assumed by the PPRAA.

In view of past difficulties in collections, the board decided reservations for Swapfest tables will be made by prepaid request only. Vendors may pay at the door for non-reserved tables.

The Board authorized reserving the facilities of the Air Force Academy for field day on the 25th and 26th of June and for the club picnic for Sunday the 14th of August.

The board authorized \$100.00 for overhead transparencies and training video tapes for Skywarn.

The board approved a donation of \$50.00 along with the \$34.00 of students to the DAV for the use of the training rooms.

The next board meeting will be on December 13th at 7:00 PM at the QTH of Steve, KØCI.

*Submitted by NØNKP PPRAA Secretary*

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## More Nonsense:

Q: "Who was Alexander Graham Bellski?"

A: "The first telephone Pole. —unknown

If Noah had been truly wise, he would have swatted those two flies. —H. Castle

The best car safety device is a rear-view mirror—with a cop in it.

—Dudley Moore

Flying is hours and hours of boredom sprinkled with a few seconds of sheer terror.

—Gregory "Pappy" Boyington

*We are here on Earth to do good to others.  
What the others are here for, I don't know.*

—W.H. Auden

*I have yet to hear a man ask for advice on  
how to combine marriage and a career.*

—Gloria Steinem

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### Committee Chairpersons, etc.

Publicity	Al Craig	594-9288
Membership	Les Borst	634-3995
Education	Al Bailey	597-8514
VE Testing	Rick Brown	531-9423
Interference	Bill Petty	591-2116
RACES	Doug Moloney	unlisted
ARES	John Chapman	635-1604
Skywarn	Steve Westby	570-1070
Public Service	Mike Stansberry	636-1290
CCARC	Oak Stockton	570-7782
Club Trailer	Harry Russell	
Newsletter	Ron Deutsch	593-8352
Club Historian	Al Craig	594-9288
Falcon Wanderers	Bob Nyman	574-5161
Programs	Steve Shaarschmidt	598-3554
Swapfest	Harvey Hunter	597-8964
Christmas Party	Susan Smith	495-0624

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When you are through reading it, give it to a friend to read. You may interest a new ham or gain a new club member for the PPRAA.



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